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PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) A SANDER, ESPECIALLY A VIBRATING SANDER, WITH A DUST EXTRACTOR FAN AND A DUST COLLECTING BAG

(71) We, MAFELL-MASCHINENFABRIK RUDOLF MEY KG., a German Kommanditgesellschaft, of Aistaig, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a sander, and more particularly a vibrating sander with a dust extraction fan, and a dust collecting bag connected with the delivery side thereof. These appliances as a rule serve for the sanding of flat surfaces and they are used not only by craftsmen but also as smaller hand appliances by laymen for domestic work. The drive is normally effected by an electric motor which in the case of belt-type sanders drives a corresponding drive and reversing roller, while in the case of vibrating sanders it is frequently connected with an eccentric drive. In order to avoid environmental nuisances and harm to the health of the person working with the appliance, sanders are now usually equipped with a dust extraction device which ordinarily consists of an extractor fan and a dust collecting bag connected with the delivery side thereof. In one known sander an extension pipe is connected to the delivery nozzle of the fan, the free end of which pipe carries the dust collecting bag. In this case the dust collecting bag is almost exclusively situated behind the appliance and thus frequently hinders work.

The present invention fits the dust collecting bag as favourably as possible on the machine so that on the one hand the overall costs for dust extraction are low as possible and on the other hand the dust bag is not troublesome either in working or in the slack condition.

According to the present invention there is provided a sander, and more particularly a vibrating sander, including a dust extraction fan, and a dust collecting bag connected with the delivery side thereof, wherein a carrier plate is situated at the delivery side of the fan and acts as an internal support for the dust collecting bag.

At the delivery side of the fan there is situated a fan outlet or delivery nozzle. This carrier plate thus directly adjoins the fan housing or its delivery nozzle, so that it is possible to dispense with the fitting of additional passages or conduits. Moreover the machine is thus very compact in the unused condition and furthermore the protrusion of the dust collecting bag in operation is such that it sacrifices practically no mobility. The empty collecting bag hangs on this plate to a certain extent like a garment on a clothes hanger. If it has the same or approximately the same length as the plate, with appropriate arrangement and association of dust bag and plate it is possible to avoid the dust collecting bag hanging down beyond the lower surface of the machine, so that the machine cannot be set down upon the dust collecting bag. Precisely in the latter case damage to the bag frequently occurs due to the abrasive belt or abrasive paper or due to screw or nail heads protruding above the surface upon which the apparatus is set.

According to a further feature of the invention the carrier plate has an attachment which can be pushed over a part of the fan outlet or delivery nozzle to attach the carrier plate thereto. This attachment serves for the precise association of fan delivery nozzle and carrier plate. For reasons of construction the fan does not always have a specifically tubular air outlet nozzle, for which reason the carrier plate in such cases need not have a tubular shaped attachment. In other words the fastening part of the carrier plate must in each case be adapted

[*Price 25p*]

to the fastening part of the fan or in the case of one-piece manufacture of the fan with other sander parts, with the sander part housing the fastening part of the fan. Of course it is also conceivable to provide the carrier plate with a fastening socket insertable into the delivery nozzle, but this solution is not absolutely preferable, for reasons of flow dynamics. In order not to disturb the air current, in such a case the delivery nozzle of the blower would have to be stepped internally, so that the carrier plate or its socket could be pushed into the widened end of the delivery nozzle. For reasons of flow dynamics the passage of the delivery nozzle should merge steadily into that of the securing device of the carrier plate. Presumably it is not necessary to emphasize additionally that of course care must be taken for a good connection of the two parts, since especially in the case of vibrating grinders the entire apparatus comes into vibration and therefore every connection must correspondingly be made secure.

According to a feature of the invention the sander is substantially rectangular in plan view and the dust collecting bag protrudes beyond the carrier plate, in the longitudinal direction of the sander. The length of the collecting bag may be approximately double the length of the carrier plate, in the longitudinal direction of the sander. Thus in this form of embodiment the protruding end of the dust collecting bag hangs over the carrier plate. To improve the support effect therefore it is expedient to extend the plate at least at its upper end with a spike-like projection, so that the hanging down of the dust bag end remains within limits.

To reduce the machine weight on the one hand and for reasons of flow dynamics on the other the carrier plate is expediently apertured or formed as a carrier frame.

According to another feature of the invention a presser plate of the sander which carries an abrasive paper, abrasive belt or the like, that is for example the vibrating and presser plate of a vibrating sander or the reversing rollers and the presser plate in the case of belt-type sander, is or are surrounded, without contact, by a ring of bristles or a similar elastic skirt, the free edge of which is flush with the sanding surface. Thus this ring of bristles surrounds the area of the workpiece which is just being worked in each case. The dust situated between it and the sanding surface is sucked in by the dust extractor fan and transported into the dust collecting bag. In this way the dust extraction as a whole is substantially improved, since if only a dust extraction fan is used it is hardly possible to avoid part of the occurring dust flying away.

A constructional embodiment of the present invention will now be described by way of example, with reference to the accompanying drawings, wherein:—

Figure 1 shows a lateral elevation of the sander according to the invention,

Figure 2 shows a section along the line II—II in Figure I, partially broken away.

The example illustrates a vibrating sander namely a relatively small hand appliance. As drive there serves an electric motor 1 (not illustrated further) which can be switched on and off by means of a switch 3 fitted on the handle 2. A fan wheel 5 which with the surrounding housing of the apparatus forms a fan 6 is placed upon the drive shaft 4 of the electric motor 1. The free end of the drive shaft 4 is formed as an eccentric 7 which sets the presser plate 8 in vibration. The latter carries an abrasive paper, an abrasive cloth or the like. In order to protect the drive system against the occurring sanding dust, an elastic tubular sleeve 11 is inserted between the stationary housing part 9 and the housing part 10 which vibrates with the presser plate 8.

As already mentioned the fan 6 sucks in the dust occurring in sanding. Its effectiveness is increased by a ring 28 of bristles surrounding the presser plate. This prevents the abrasive dust from flying away laterally. Together with the presser plate it forms the commencement of the suction passage 12 which is defined substantially by the elastic sleeve 11 and the surrounding housing part 13. Through apertures (not shown further) the dust-laden air flows in the direction of the arrows 15 to the fan wheel 5 and thence by way of the delivery passage 16 to the dust collecting bag 17.

The dust collecting bag 17 envelopes a carrier plate 19 secured to the fan outlet 18. It possesses an attachment 20 which is pushed over the fan delivery nozzle 16 or fan outlet 18. By reason of the particular construction of the housing the attachment 20 of the carrier plate 19 grasps around only one of the sides and the two end flanks 21, 22 of the delivery nozzle, which is of rectangular cross-section (Figure 1). At the lower end 23 of the delivery nozzle the attachment 20 of the carrier plate 19 abuts flush (Figure 2).

The carrier plate 19 is provided with a large aperture 24 which ensures unimpeded and uniform filling of the dust collecting bag 17. Since the latter, seen in the longitudinal direction of the sander, is longer than the carrier plate 19, the carrier plate is equipped with a spike-like extension 25. This prolongs the support surface for the dust collecting bag, which in the slack condition hangs on the upper end of the carrier plate 19 like a garment on a clothes hanger. In order to widen the support area

the carrier plate 19 is provided with an edge 26. As figure 2 shows very clearly, the opening 27 of the dust collecting bag 17 encloses the tubular part of the attachment 20 of the carrier plate 19 in a sealing manner. The mouth opening is formed with a tubular peripheral bead and reinforced. A stressing spring can be accommodated on the inner surface of the tube. The securing of the neck-shaped part of the dust collecting bag 17 with the aid of a hose clip or the like is also conceivable. However, the fitting must be selected so that the dust collecting bag can be removed, emptied and then fitted again, rapidly and simply.

WHAT WE CLAIM IS:—

1. A sander, and more particularly a vibrating sander, including a dust extraction fan, and a dust collecting bag connected with the delivery side thereof, wherein a carrier plate is situated at the delivery side of the fan and acts as an internal support for the dust collecting bag.

2. A sander as claimed in claim 1 wherein at the delivery side of the fan there is situated a fan outlet or delivery nozzle.

3. A sander as claimed in claim 2, wherein the carrier plate has an attachment which can be pushed over a part of the fan outlet or delivery nozzle to attach the carrier plate thereto.

4. A sander as claimed in claim 2, wherein the fan outlet or delivery nozzle is of rectangular cross-section, and the carrier plate has an attachment which grasps around only one of the sides and the two end flanks of the outlet or nozzle.

5. A sander as claimed in any one of claims 1 to 4, wherein the sander is substantially rectangular in plan view, and the dust collecting bag extends beyond the carrier plate, in the longitudinal direction of the sander.

6. A sander as claimed in claim 5, wherein the length of the collecting bag is approximately double the length of the carrier plate, in the longitudinal direction of the sander.

7. A sander as claimed in any one of the preceding claims, wherein the carrier plate is apertured or formed as a carrier frame.

8. A sander as claimed in any one of the preceding claims, provided with a presser plate which carries an abrasive paper, abrasive belt or like, the presser plate being surrounded without contact therewith by a bristle ring, or a similar elastic skirt, the free edge of which is flush with the sanding surface.

9. A sander substantially as described herein with reference to and as illustrated by the accompanying drawings.

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2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*

Sheet 1

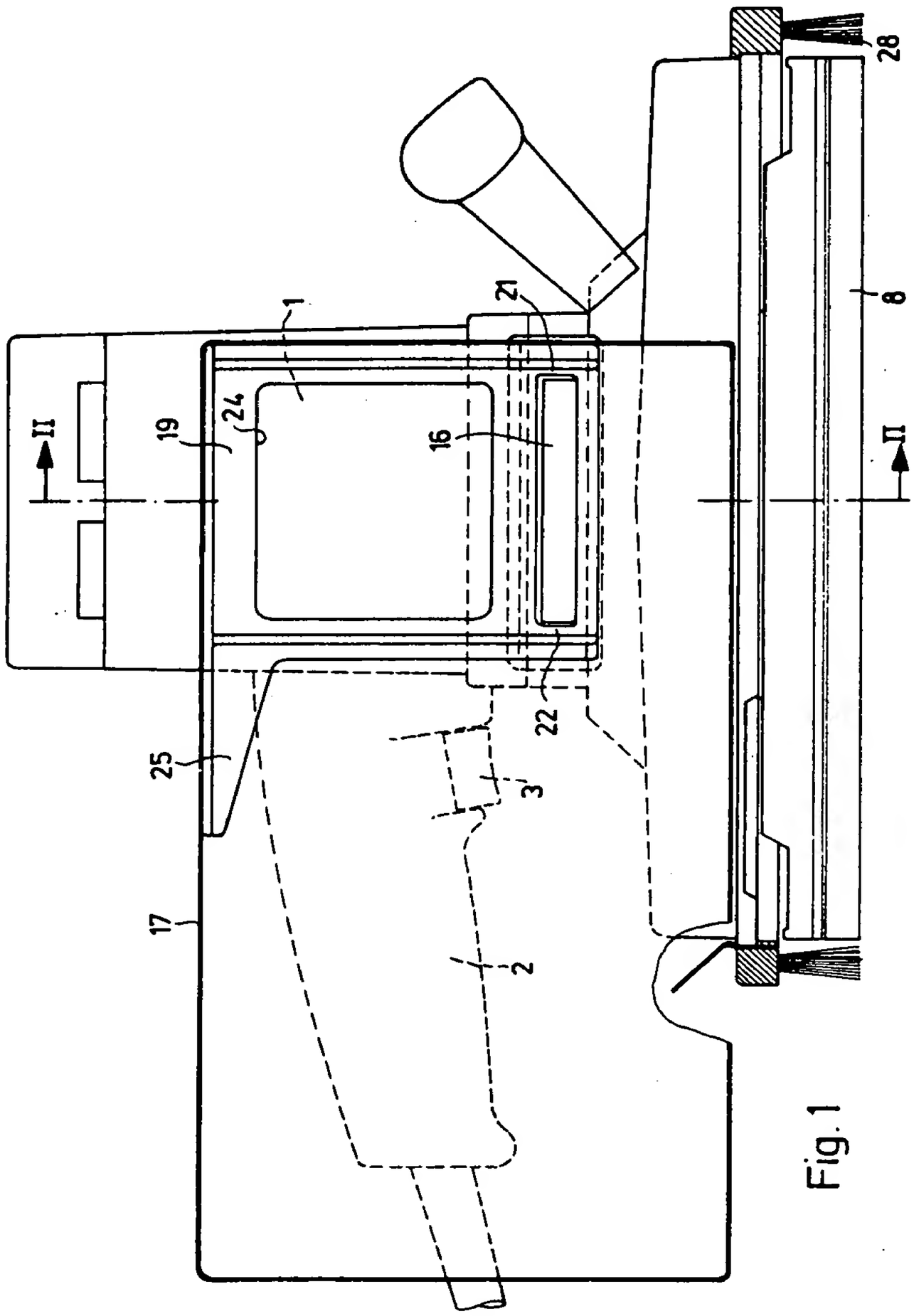

Fig.1

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2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 2

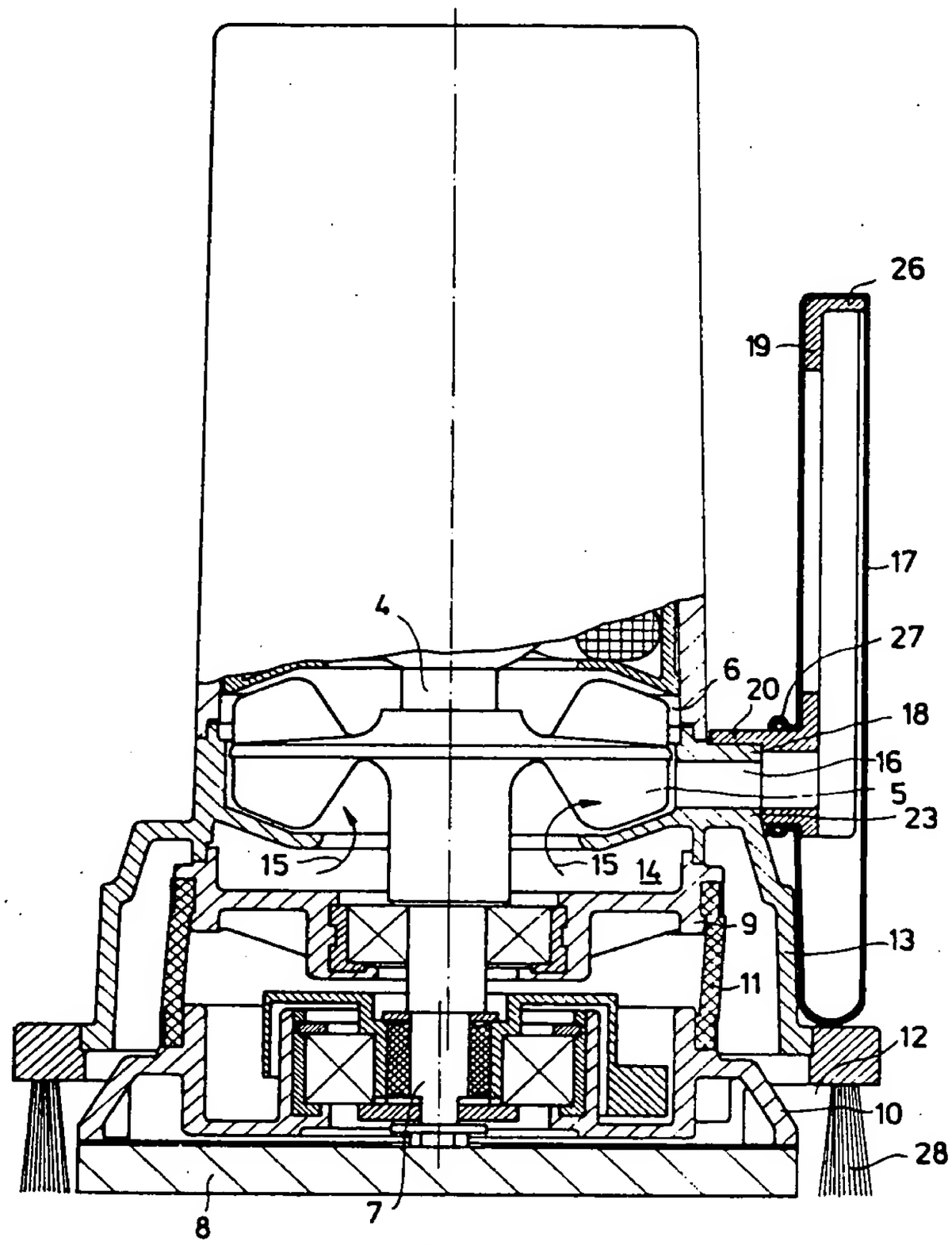

Fig. 2